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CC-99-200

North American Numbering Council
c/o Columbia Institute for Tele-Information
Columbia Business School
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3022 Broadway
New York, NY 10027-6902

March 25, 2004

Mr. William Maher
Chief, Wireline Competition Bureau
Federal Communications Commission
445 Twelfth Street, S.W.
Washington, D.C. 20554

Re: Contamination Threshold Evaluation

Dear Mr. Maher:

On August 11, 2003, the FCC asked the North American Numbering Council (NANC) to "evaluate the extent to which increasing the contamination threshold made additional numbering resources available in the 310 and 909 area codes." At its September 25, 2003 meeting, NANC formed an Issues Management Group (IMG) to perform the requested evaluation. The purpose of this letter is to transmit to the Commission the IMG's final report which was approved by NANC at its March 16, 2004 meeting.

The IMG examined all the so-called "hyper-contaminated" number blocks (those with contamination between 10 percent and 25 percent) returned in a recent five month period. The IMG concluded that the addition of 114 hyper-contaminated blocks extended the life of the 310 area code by approximately two (2) to three and one-half (3 ½) months and that of the 909 area code by approximately less than one (1) month to one and one-half (1 ½) months.

You should note that the California Public Utilities Commission (CPUC) will be preparing a separate report on the subject and that the CPUC's participation in this IMG should not be construed as an expression of the CPUC's position on the effectiveness of using hyper-contaminated blocks to extend the life of an NPA.

NANC also recommends that the FCC should analyze the relative benefits of employing the donation of hyper-contaminated blocks in delaying area code exhaust with the impacts upon service providers, industry infrastructure and consumers as identified in the IMG's report.

Finally, I should note that the IMG's report is the result of a tremendous effort: 12 conference call meetings, the analysis of considerable volumes of data, the exchange of scores of e-mails and drafting and editing numerous drafts of the report. The conference calls alone consumed more than 200 person-hours by industry experts and the total effort invested in the report is probably in excess of 1,000 person-hours. I expressed NANC's appreciation of this substantial effort to the IMG.

Sincerely,

Robert C. Atkinson by DBlue

Robert C. Atkinson
Chairman

cc: NANC Members (w/out attachment)
Carol E. Mattey – FCC
Eric Einhorn - FCC
Cheryl Callahan - FCC
Sanford Williams - FCC
Deborah Blue – FCC

Report on the Impact of a 25% Number Pooling Contamination Threshold

Prepared for the NANC
by the
25% Contamination Threshold
Issue Management Group

March 25, 2004

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1. EXECUTIVE SUMMARY

On August 11, 2003, The Federal Communications Commission (FCC) asked the North American Numbering Council (NANC) to "evaluate the extent to which increasing the contamination threshold made additional numbering resources available in the 310 and 909 area codes." The request was made as part of the Order that granted in part the waiver petition filed on September 5, 2002 by the California Public Utilities Commission (CPUC). At its September 25, 2003 meeting, the NANC formed an Issue Management Group (IMG) to perform the evaluation. At its first meeting, the IMG decided to expand the focus of its evaluation to provide NANC with other aspects of using 25% contaminated blocks, including an analysis of the work activity necessary to implement the use of 25% contaminated blocks

To ensure the report was completed prior to the March 2004 NANC meeting, the IMG evaluation period was from August 21, 2003 to January 31, 2004. To perform its numerical counting of blocks the IMG obtained information from the Pooling Administrator (PA) regarding which blocks were donated[1]. Since the data provided by the PA does not indicate the level of block contamination, the IMG participants performed additional steps to identify which blocks were ≤10% contaminated (called contaminated blocks) versus blocks which were >10% and <25% contaminated (called hyper-contaminated blocks). Combined for both NPAs, a total of 114 hyper-contaminated blocks were contributed by service providers (SPs), and, an additional 653 blocks less than hyper-contaminated blocks were also added to the corresponding 310/909 rate-center pools

Block *Donations* during the study period of August 21, 2003 - January 31, 2004, consisted of 102 hyper-contaminated blocks. Block *Returns* during this same study period amounted to 12 hyper-contaminated blocks. In summary, a total of 114 hyper-contaminated blocks were made available to the corresponding rate center pools in the 310 and 909 area codes. In the 310 NPA, 15 of the 16 rate centers had some level of increase in block inventory and a total of 66 hyper-contaminated blocks were contributed by SPs. In the 909 NPA, 26 of the 41 total rate centers had some level of increase in block inventory and a total of 48 hyper-contaminated blocks were contributed by SPs.

Considering all SP Donated (102) *and* Returned (12) hyper-contaminated blocks, the IMG reached the conclusion that the addition of these 114 hyper-contaminated blocks extended the life of the 310 NPA by approximately two (2) to three and one-half (3 ½) months and that of the 909 NPA by approximately less than one (1) month to one and one-half (1 ½) months.

It is worthy to note the CPUC will be preparing a separate report on the subject and that the CPUC's participation in this IMG should not be construed as an expression of CPUC's position on the effectiveness of using hyper-contaminated blocks to extend the life of an NPA. As a result of its participation in the IMG process, the CPUC generally concurred with the information contained in Sections 2 through 6 of this report. The CPUC abstained from modifying the remaining sections of this report given its directive from the FCC (FCC 03-196) to provide its own report.

The IMG encourages the NANC to recommend that the FCC further analyze the relative benefits of employing the donation of hyper-contaminated blocks in delaying NPA exhaust with the impacts upon service providers, industry infrastructure and consumers as identified in this report.

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[1] As a qualification, it should be recognized that two classes of blocks can become part of the number pool. *Donations* are those blocks given to the pool at its inception by the carrier to which the NXX was assigned before number pooling began, or given after pool start by a carrier that was not required to number pool when it received the NXX. (Example: wireless carrier) Donations are made both as number pools are initiated, and also at later times if carriers do not have a current need for the numbering resource. *Returns* are those blocks which were assigned by the PA to a carrier, and later are given back to the PA for a variety of reasons.

[2] See CC Docket No. 99-200, REPORT AND ORDER AND FURTHER NOTICE OF PROPOSED RULE MAKING, Adopted: March 17, 2000, Released: March 31, 2000, Paragraphs 191-192. Also, see NANC Report at § 5.7.3; see

2. BACKGROUND

On September 5, 2002, the CPUC petitioned the FCC for a waiver of the 10 percent contamination threshold rule used during pool establishment by SPs when determining a block's eligibility for donation to a new number pool. The FCC set the threshold, or contamination level, for blocks to be donated at 10 percent in its March 1, 2000 Report and Order, and Further Notice of Proposed Rulemaking as a result of a recommendation by the NANC and the Industry Numbering Committee (INC)[2]. The CPUC waiver petition asks the FCC to grant the CPUC discretion to raise the contamination level for all previously established number pools to 25 percent in each of the NPAs under the CPUC's jurisdiction.

CPUC calculations, based upon NRUF data available in August 2002, show that statewide approximately 7,000 additional blocks would become eligible for donation under the increased contamination level. NeuStar reported that as of November 13, 2003, the 909 NPA had a total of 639 blocks available, while 310 contained 372 available blocks.

The FCC Wireline Competition Bureau issued an Order on August 11, 2003, that granted, in part, the CPUC's request for waiver of the FCC contamination threshold rule. In the Order, the Bureau solicited the North American Numbering Council's (NANC) analysis of numbering resources added by granting of the waiver.

> *We also request the NANC to evaluate the extent to which increasing the contamination threshold made additional numbering resources available in the 310 and 909 area codes. The NANC report should be submitted to the Bureau by April 30, 2004.*

The NANC in turn formed an Issue Management Group (IMG) to respond to the FCC.

3. DEFINING THE TASK

The IMG discussed different approaches in gathering data in order to evaluate whether additional numbering resources would provide a benefit in 310 and 909. The IMG concluded that there were two basic elements that would be part of the data. First, there needed to be a count of the current inventory of blocks, followed by a count of additional blocks donated during the trial period. Second, the IMG agreed to capture the work activity associated with the 25% block donation.

The IMG agreed to address whether increasing the contamination level in California makes additional numbering resources available and provides a benefit in 310 and 909. While not addressing specific numerical costs, the IMG attempted to capture the work activity associated with the 25% block donation process. The documented changes and efforts required by SPs, number administrators and infrastructure warrant a more detailed investigation and evaluation if the use of contaminated blocks in the 10.1 – 25 percent range was being considered for adoption as the industry standard. While some members defined "benefit" as a block that was donated and used by another carrier, other members saw a "benefit" in block donation itself.

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also Thousand Block Pooling Guidelines at §§ 4.1, 8.2.4-8.2.8.

For the purpose of simplifying the categorization of blocks containing 1 – 10 percent contamination from those with 10.1 – 25 percent contamination, the following two categories are referenced throughout the report:

- **Hyper-Contaminated** – Blocks contaminated from 10.1% to 25%, that is, up to 250 but no less than 101 TNs of the total 1000 TNs in the block are assigned and not available for assignment to the customers of the new block assignee.
- **Contaminated** – Blocks contaminated from 1% to 10%, that is, up to 100 but no less than 1 TN of the total 1000 TNs in the block are assigned and not available for assignment to the customers of the new block assignee.

4. SERVICE PROVIDER IMPACTS OF HYPER- CONTAMINATED BLOCKS

4.1 Block Identification and Donation to Pool

Depending on whether an SP's processes are mechanized, there may be a variation in the actual impact to any specific SP. Mechanized processes may need to be modified and/or developed. This is likely the case if SPs are expected to participate in frequent donation exercises in any one NPA or participate in multiple NPAs employing a non-uniform contamination threshold since complexity of SP's number administration duties and responsibilities will likely require modifications to SP processes and procedures.

The steps below provide a high-level explanation of the work associated with modifying processes and procedures necessary to operate in a hyper-contaminated environment. The steps include the Block Identification, Block Protection, and Block Donation that each SP must complete in order to donate or return[3] hyper-contaminated blocks to the industry pool. The IMG recognizes that each SP may have a slightly different process since hyper-contaminated block donation was performed using mostly manual processes as opposed to available tools developed by SPs based upon the existing industry standard convention of a 10 percent contamination threshold.

4.1.1 Block Identification

Once an SP determines it has more than a six-month supply of resources on hand in any one rate center, the next step is to determine which blocks are eligible for block donation. Each SP may have a unique process for identifying hyper-contaminated blocks since only once during pool creation do SPs need to identify contaminated blocks for block donation to the pool.

Some SPs believe the donation process will remain a one-time event typically occurring with the initial establishment of a pool. Concern was expressed over the intensely manual nature of the individual SP processes that must be used to accurately identify hyper-contaminated blocks. In the event this process occurs beyond pool establishment, an in-depth evaluation is warranted to determine the impact on SPs and their need to implement process mechanization to ensure timely and accurate[4] block identification.

[3] The contamination threshold determines if a block is eligible for block donation that takes place during initial pool establishment. SPs donate blocks from embedded NXXs that were assigned by NANPA in a pre-pooling environment. A block return is the voluntary return to the pool of blocks previously assigned to the SP by the PA. However, an SP can return a block to the pool for reassignment only if it is no more than 10% contaminated.

[4] For example, Dealer Pools that require an SP to maintain an inventory of numbers for assignment to end-users by other entities when reselling the services of a facility-based SP may be uniquely impacted by the Block Identification and Protection process. These numbers are not eligible for donation.

There are a number of intermediate steps that must take place to complete the Block Identification Process:

- A Draft Block Donation & Forecast Report is prepared. The six months to exhaust forecast is reviewed and blocks eligible for donation are identified.
- A Telephone Number Identification List is prepared and completed. During this phase, phone numbers are manually checked against internal systems to verify the percentage of contamination within a block.
- A List of Telephone Numbers is completed to show the amount of numbers working in each donated block.

4.1.2 Block Protection

Block Protection is the process SPs perform to update their internal processes to prevent the assignment of telephone numbers within blocks identified for donation. Depending on the SP's internal processes, this may involve modifications to information in administration systems or it may involve manual processes[5].

4.1.3 Block Donation Process

Block Donation is a one-time process used by SPs during pool establishment to ensure all TNs within the donated block are useable or ported if there is an existing customer assignment. The following describes the work necessary before the completion of Intra-Service Provider Ports (ISPP):

1. Prepare list of ISPP orders and manual subscription versions.
2. Review ISPP Orders for accuracy.
3. Release ISPP orders.
4. Review and correct orders in error status.
5. Activate and create subscription versions.

4.1.4 Block Forecasting and Applications Process

The ability to donate and to receive hyper-contaminated blocks has a direct impact on the SP processes, including the SP forecast of the quantity of blocks required on an ongoing basis to maintain no more than a six month supply of TNs in inventory. Based upon a SP forecast, the following impacts upon a SP's ability to maintain a sufficient supply of TNs were identified and warrant further consideration when weighing the benefit of assigning hyper-contaminated blocks back to SPs.

SPs may employ TN management systems to monitor inventory in multiple switches within each rate center. These systems compare past consumption and anticipated demand to forecast how many additional blocks are required to maintain a six-month supply of TNs.
In a 10% contaminated donation environment, an SP can count on having a minimum of 900 numbers available for assignment from any thousands-block assigned by the PA. When a hyper-contaminated threshold is employed, an SP can only be certain that a minimum of 750 numbers is available. As a result, a new set of assumptions is necessary to forecast future block requirements in a hyper-contaminated environment since SPs must account for this difference and prepare unique forecasts for areas where hyper-contaminated blocks are assigned. For example, an SP needing 6,000 TNs may forecast 6 blocks in a 10% environment but only receive 4500 TNs in a 25% environment (6 blocks X 750 TNs). Therefore, the SP must submit an additional application to obtain one additional block.

[5] Note that manual processes may be widespread since current industry standards require one-time block donation during the creation of a rate center pool.

The current 1000 TN criteria described above assumes that at least 900 TNs are assignable in a 10% contamination environment. In a 25% contaminated environment, SP systems will likely need to change to (1) accurately forecast anticipated block demand and (2) order the appropriate quantity of blocks. SP systems performing forecasting and block ordering according to the 1000 TN criteria may be off by an additional 15%. If SPs do not redesign their inventory systems but continue to forecast/order blocks based upon a 1000 TN criteria, block forecasts will be understated. Likewise, block application volumes will be higher. Upon block assignment, the SP will examine the assigned blocks and request an additional block if it determines the quantity of available TNs is not sufficient to satisfy its six-month inventory needs. For example, if an SP forecasts five blocks, orders five blocks but finds the quantity of available TNs only 4000, then the SP needs to order an additional block.

4.1.5 Summary of Service Providers' Concerns

IMG members were concerned about the impact upon their company processes and procedures if hyper-contaminated blocks became the industry standard for ongoing block donation at a national level. Any requirement to implement the hyper-contamination threshold in other NPAs impacts the processes outlined above as well as the following:

- **Inconsistent Implementation:** If the contamination threshold differs by jurisdiction, this inconsistency may complicate the manual processes and require additional modifications for existing SPs who have mechanized the processes developed based on a 10% contamination level.

- **More Frequent Block Applications:** A 25% contamination threshold may lead to subsequent requests for blocks by SPs once the SPs examine their assigned blocks and realize that they do not meet their resource needs. Increasing the contamination level of blocks received by carriers would increase the frequency by which SPs apply for blocks (a more frequent replenishment of numbering resources). This works to the disadvantage of SPs since a 25% contaminated block could contain 150 fewer numbers than a 10% contaminated block. Such a block would be depleted sooner, thus an SP could expect to apply for numbering resources more often.

- **Increased Safety Valve Requests:** The application process is further complicated when a carrier must acquire blocks using the FCC approved "safety valve" process. The increase to a 25% contamination level does not cause the need for a safety valve request, but shortens the amount of time a carrier has between requests. The speed at which states resolve safety valve requests is an important factor. It is worthy to note the CPUC has successfully streamlined its safety valve process to a same-day response in most cases. A streamlined safety valve process would ease this burden upon SPs.

- **Increased Internal Block Application Expense:** Block application expenses will increase internally for SPs as will the quantity of applications processed by the PA.

- **Changes To SP TN Forecasting System:** SP systems using the 1000 TN approach for determining forecasts and processing block requests may need to modify system set-points and algorithms to accurately forecast and order blocks that may have only 750 TNs available for assignment.

- **New SP Block Processing Feature/Functionality:** SP systems may need to be modified to provide an automated feature for evaluating recently assigned blocks to identify the level of contamination - each time a block is received – to trigger the application of an additional block to maintain a six-month supply.

- **Modifications To SP and Pooling Administration System:** The exchange of data between SPs' systems and PAS necessary to hunt and select an appropriately contaminated "best-fit" block may require modifications to SP systems. PAS could be modified to display the actual contamination rate

for each block in the industry inventory pool to eliminate additional internal SP expense associated with "second-applications" and to ensure SPs select the "best-fit" block, thereby extending the life of the rate center pool.

5. NUMBER PORTABILITY ADMINISTRATION CENTER & INFRASTRUCTURE

The NPAC infrastructure consists of two Common Management Information Protocol (CMIP) -based, functional interfaces Service Order Activation (SOA) and Local Service Management System (LSMS) into the Service Management System (SMS). The mechanized interface allows a service provider system (LSMS and /or SOA) to automatically port numbers and to receive porting updates from the NPAC. Mechanized interface users install and manage their own LSMS/SOA servers on their own networks and are required to establish dedicated, redundant connections to the NPAC in accordance with minimum connectivity requirements.

Due to the ISPPs required when donating a contaminated block, each additional TN donated due to an increase in the contamination threshold results in an additional record placed in the NPAC. These costs are borne by the industry and are based upon transactional activity in the NPAC. More specifically, every porting event has a fixed "price" that is placed in the industry "bill". These shared costs are then allocated on a pro rata basis among all SPs using the NPAC in a given region. Therefore, increasing the contamination level to 25% could equate to potentially 150 more ports per donated block (the difference between 10% contamination and 25% contamination).

Assume a situation where a carrier needs 3,500 numbers to augment its inventory for a particular switch. Using the 10% block contamination example[6], four blocks would be required to meet this carrier's need. Using the 25% block contamination example, five blocks would be required to meet the carrier's need. By increasing the level of block contamination, the donating SP is required to perform more ISPPs in order to donate those hyper-contaminated blocks to the pool. In the 10% example, 320 ISPPs were necessary to move 3,600 spare numbers. In the 25% example, 750 ISPPs were necessary to move 3,750 spare numbers. When the contamination level rose from 10% to 25%, the number of ISPPs performed was almost 2.5 times higher to move roughly the same quantity of spare numbers. Hence, it appears reasonable to conclude there is some additional NPAC transaction cost resulting from increasing thresholds of block contamination threshold.

5.1 Signaling System 7 (SS7) Infrastructure

SS-7 Infrastructure consists of regional databases, local databases, communication links between the NPAC and the regional database, communication links between the regional database and the local database, and communication links between local database and the Service Provider switches. For reasons similar to the increased capacity demands on the NPAC infrastructure, the regional and local SS7 databases would likewise experience additional capacity demands. This leads to increased traffic over SS7 links between the NPAC and the LSMS as well as the SCPs. This increase may lead to additional expense to expand the link bandwidth and may require additional T-1 Links. Also, there is a slight possibility the communication links between databases may be impacted due to the incremental number of transactions.

[6] Two examples were developed to illustrate the effects of contamination and hyper-contamination and their impacts on intra service provider porting. Please refer to Appendix A-4 for details.

5.2 Administrator Processes/Procedures

5.2.1 Pooling Administrator (PA)

There are likely to be at least two impacts to Pooling Administration. First, SPs do not currently identify the level of contamination when they donate blocks, and the contamination level can change after donation if TNs from those blocks are disconnected or if the SP inadvertently assigns TNs from a donated block that has not been properly protected. Also, there is no requirement for PAS to track the level of contamination and it does not have the ability to do so at this time. If a carrier needs to know the level of contamination in a block, it can request a report from the NPAC. This step would insert a manual process into an existing mechanized process, which could delay the preparation of a block application. Alternatively, the industry could request the PA to perform these functions, which would require a PAS Change Order. If PAS has to accommodate blocks with 10% contamination in some areas, and 25% in others, additional complexity would be added to the process.

The second impact to the PA would be the incremental change in the number of blocks donated since more blocks would meet the contamination threshold level. However, this was thought to be virtually unnoticeable.

5.3 Consumer Impacts

The IMG is aware of issues associated with the existing donation process that have impacted consumers. Hence, as noted below, the resulting impacts to customers from the increased contamination level may be exacerbated.

The Block Donation Process requires the donating service providers to perform an Intra-Service Provider Port at the time of block donation for every customer that is assigned one of the "contaminated" numbers. Circumstances have been identified where customers were taken out of service because of SP errors in performing those ISP ports. Raising the contamination level from 10% to 25% has resulted in increasing the number of ports per block by as many as 150 ports, thereby increasing the opportunity for customer impacting errors.

To the extent that manual processes increase the opportunity for errors, and that many of the processes performed by SPs are currently manual, the IMG believes that manual processing errors could increase as a direct result of increasing the contamination level. In addition, since porting requires service orders, some of which are manually processed, there is the possibility that a manual error could result in the inadvertent port of a TN, which if left unidentified, could impact a second SP's customer.

An SP in receipt of a donated block has no way of knowing if the previous block holder has performed the required ISPPs and if certain TNs within the block are actually assigned and working in the PSTN. If the ISPPs have not been performed and if the receiving SP assigns one of those "contaminated" numbers to one of its customers, there are impacts to the donating SP's customer. Performing the ISPP does not completely correct the problem because the new customer must be assigned another TN. Depending on timing, this could have an impact on the customer beyond just number assignment (e.g. business cards, letterhead, advertising, etc.).

6. ADDITIONAL CONSIDERATION – IMPACT ON THE COST OF NPA RELIEF

The IMG discussed incorporating the costs associated with NPA relief as a benefit to increasing the contamination level. There are however, intangible considerations that make it difficult to incorporate that concept into this report. Costs associated with NPA relief are dependent on the type of relief that is ordered. Additionally, there are complexities in determining the "time value of money" associated with deferring those costs for whatever length of time the NPA relief is deferred

6.1 Consumer Costs Associated with NPA Relief

The IMG acknowledged that consumers are impacted when NPA relief activity is required. NPA splits drive tangible costs to consumers (i.e., the costs associated with requiring consumers to change their numbers when NPA splits are implemented), but NPA overlays do not drive those same tangible costs to consumers. The IMG did not attempt to quantify any intangible impacts associated with any NPA relief alternatives.

7. DATA COLLECTION

The essential question put to the IMG was, "How did the contributions of more contaminated blocks impact both the number pools in 310 and 909 NPAs and the parties that supported those efforts?" The initial IMG work effort was focused on how to collect the raw data.

The data used to analyze the impact of >10% donations were principally provided from the PA. The PA provided historical block activity to lay a background before the trial period began on August 21, 2003. The PA also provided ongoing monthly updates that allowed the IMG to assess developments during the trial. The data received is included in Appendices A-1 and A-3. This data is divided into two parts. The first (Appendix A-1) provides summary information at the rate center level to display the puts-and-takes of each number pool in each of the 310 and 909 NPAs. The second (Appendix A-3) provides individual block data and summarized NPA level impacts of additions and subtractions from the each NPA.

The PA provided the history of donations to the pools at NPA level by month since the inception of each pool. (Different start dates exist for 310 and 909.) This data divided donations into either pristine (un-contaminated) blocks or contaminated (.1% to 10%) blocks. It also provided a history of block assignments since the inception of each pool. This data is divided by NPA and shows block activities before and during the trial.

In addition to this historical information, the PA provided five separate figures on a monthly basis at the rate center level for CA 310 and 909 from August 21, 2003 through January 31, 2004: the number of blocks available at the beginning of the month, blocks donated, returned, and assigned that month, and blocks available at the end of each month. This data is located in Appendix A-1.

The PA provided the block assignment history from August 2002 through January 2004 at the rate center level for CA 310 and 909. This data is located in Appendix A-2.

In addition to the above data, the following information was calculated using non-PA resources: the quantity of telephone numbers ported within the block, a formulaic indicator of whether the block is in the >10% range, the amount of telephone numbers available to an acquirer of that block, and the date on which the contamination level was assessed. Both donations and returns use the same data layout and sources.

Three charts are provided displaying the *Change in Supply* and the *Average Demand* for three periods of demand. These can be found in Appendix A-3.

In order to best represent the benefit of increasing the contamination level to 25% based on the raw data, the IMG believed it important to identify the relative increase of blocks donated as compared to those that would have been donated using the 10% contamination threshold.

Although the trial remains in progress, the IMG stopped collecting its data after January 31st in order to complete the report and to provide NANC members an opportunity to review it before the NANC's meeting in March. The information accumulated and analyzed by the IMG includes the following specific items:

⇒ During the study period, August 21, 2003 - January 31, 2004, 208 total blocks have been donated and 559 total blocks have been returned:

1. Of these donations, 42 were uncontaminated, 64 were contaminated up to 10%, and 102 were hyper-contaminated. Of those 102 hyper-contaminated blocks donated, an average available telephone number count of 821 per block was produced, with a total of **83,742 telephone numbers** flowing back into inventory available to number pooling applicants.

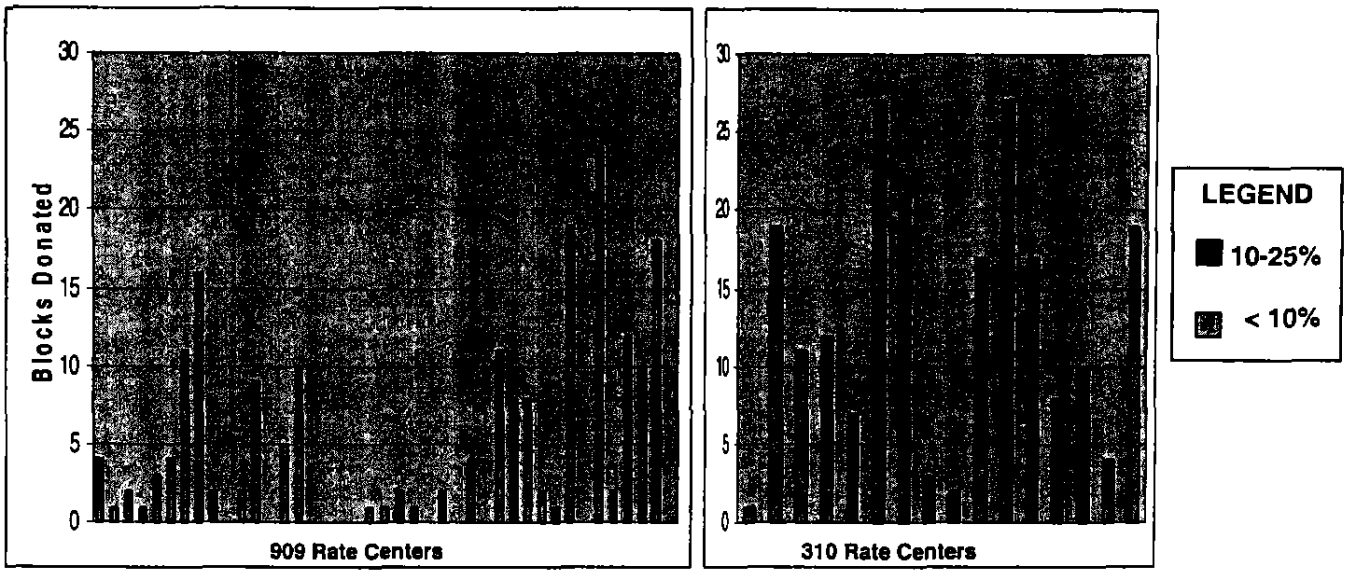
2. Of these returns, 348 were uncontaminated, 199 were 10%-or-less and 12 were hyper-contaminated. Of those 12 hyper-contaminated blocks donated, an average available telephone number count of 690[7] per block was produced, with a total of **8,280 telephone numbers** flowing back into inventory available to number pooling applicants.

3. The 310 NPA had 18, 30, and 61 (109 total) **donated blocks**, respectively, and 909 NPA had 24, 34, and 41 (99 total).
    - The 310 NPA has 16 conventional rate centers, with donations of all types made in 14 RCs, and hyper-contaminated donations made to 13 of those 14. The 909 NPA has 41 conventional rate centers, with donations of all types made in 20 RCs, and hyper-contaminated donations made to 16 of those 20.

4. The 310 NPA had 122, 96, and 5 (223 total) **returned blocks**, respectively, and 909 NPA had 226, 103, and 7 (336 total).
    - The 310 NPA has 16 conventional rate centers, with returns of all types made in 15 RCs, and hyper-contaminated donations made to 5 of those 15. The 909 NPA has 41 conventional rate centers, with returns of all types made in 26 RCs, and hyper-contaminated donations made to 6 of those 26.

[7] In at least one instance, TN assignments had begun prior to when the level of contamination within returned hyper-contaminated blocks was measured. Since there were only 12 block-donations, the average should not be interpreted by the reader to indicate that blocks with a greater than 25% contamination were returned.

The charts below identify the number of blocks donated by rate center during the trial period August 21, 2003 to January 31, 2004 and separate the contaminated from the hyper-contaminated blocks. A table identifying the actual number of blocks donated, by rate center, has been provided in Appendix A-3.



8. DATA ANALYSIS

The IMG discussed the many variables that directly impact any analysis that could be performed. In addition, the analysis would be based on a snapshot of data, which could affect how the variables are analyzed. Most significant of these variables include:

- whether historical data regarding past demand has any correlation with anticipated/future demand
- whether the "one-time" donations associated with this trial have any correlation with future expectation for donations
- whether there were any one-time occurrences in the past that would create any anomalies warranting elimination of certain historical data.
- which statistical methodology was applied to any historical data to forecast future supply or demand.

Although the IMG members aired concerns about the analysis, including potential variables in the information used and the methodology and the framing assumptions in the data, the IMG chose a single method that it believed best evaluated the results of the trial during its review period.

Again the IMG focused on the essential question, "How did the contributions of more contaminated blocks impact both the number pools in 310 and 909 NPAs and the parties that supported those efforts?" To answer the question related to the blocks and the number pools, it was necessary to consider:

- the existing block inventory in the number pools;
- additions to the block inventory in the number pools; and,

- the demand for blocks of numbers in the number pools expressed in assignments of those blocks.

Additionally, it was important to measure the changes in contributions attributed to hyper-contaminated blocks of numbers against some anticipated or historical consumption rate to estimate an impact. While the existing inventory, the additions to that inventory, and the assignments of blocks from that inventory are fixed values that can be empirically reported, future demand is unknown. A simple model has been adopted herein, recognizing that parties receiving the raw data may offer other models. The model used can be represented as:

$$\frac{\textit{Change in Supply}}{\textit{Average Demand}} = \textit{Months of Additional Life}$$

where *Change in Supply* is the count of 10-25% contaminated blocks added during the study period, and *Average Demand* is the mean monthly assignment of blocks for some historical period. The quotient of this formula is *Months of Additional Life* that the pool will gain due to additions of 10-25% blocks during the study period.

Besides the specifics of block data gathered, granularity of analysis has been presented at two levels. Since the 310 and 909 NPAs are distinct, data can be viewed at the macro level of each NPA. A more granular view of the data can be gained at the rate center level. This more granular level is the level at which NXX demand occurs. Since NXXs are associated with one-and-only-one rate center, a need for numbering resources in excess of what the pool possesses in any particular rate center will result in an NXX being opened. This assignment of an NXX shortens the life of the NPA when viewed in the context of all NXX demand in the NPA. The details associated with each block added to (donated or returned) the inventory, and associated with each block subtracted from (assigned) the inventory are provided at rate center level. Consequently, data has been aggregated to see the impact at both NPA and rate center groupings.

9. FINDINGS & CONCLUSION

The IMG reviewed and evaluated the block data collected by the PA and analyzed what effect the contribution of hyper-contaminated blocks had on the respective lives of the 310 and 909 NPAs. The IMG chose the method that it believed best depicted the experience using actual block data and historical block consumption rates in the 310 and 909 NPAs in the 2000 - 2004 timeframe. Based upon this data and using three scenarios, the IMG reached the conclusion that the addition of hyper-contaminated donations and returns extended the life of the 310 NPA by approximately two (2) to three and one-half (3 ½) months and that of the 909 NPA by approximately less than one (1) month to one and one-half (1 ½) months.

Block donations during the study period of August 21, 2003 - January 31, 2004 consisted of 102 hyper-contaminated blocks. Block returns during this same study period amounted to 12 hyper-contaminated blocks. In summary, a total of 114 hyper-contaminated blocks were made available to the corresponding rate center pools in the 310 and 909 area codes.

It is worth noting that 13 of the 16 rate centers in 310 NPA and 16 of the 41 rate centers in 909 benefited from hyper-contaminated block donations. Likewise, only 5 of the 16 rate centers in the 310 and 6 of the 41 rate centers in 909 benefited from the additional hyper-contaminated block returns.

The IMG encourages the NANC, and subsequently the FCC, to evaluate the relative benefits of the incremental blocks donated due to hyper-contamination in comparison to service provider impacts, industry infrastructure and potential impacts to consumers.

10. APPENDICES – SUMMARY OF DATA

A1 – 909 310 Rate Center Data

A2 – 909 310 Rate Center Assignments History

A3 – NANC IMG 25% Individual Block Detail Report & Final Charts

A4 - 10% vs. 25% Examples of Impact on Quantity of SV